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# Prevalence and risk factors of suicidal ideation among Saudi college students in the city of Jeddah

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## ABSTRACT

*Introduction:* Suicide is a bad result of multiple reasons that put a lot of pressure on college students who find that death is the way to escape and get rid of all the problems they come across. *Objectives:* The purpose of this study is to determine the prevalence, identify risk factors, and predict individual-level risk for future or persistent suicidal ideations among college students in the city of Jeddah. *Methodology:* A structured questionnaire was employed as a study tool. This tool was created after consulting relevant studies. The questionnaire consisted of 40 questions, classified into five main sections. The first one contained demographic data and academic performance-characteristic questions. The second section contained the psychological and health problem questions. The third section included the suicidal screening using the Columbia–Suicide Severity Rating Scale (C-SSRS), which is a screening and assessment tool that provides critical information about the presence or absence of suicidal thinking, the intensity of those thoughts, and the presence or absence of prior suicide attempts. The fourth section contained the burnout screening by the Copenhagen Burnout Inventory (CBI). It is considered as a valid and reliable tool for assessing personal and study-related burnout. *Conclusions:* We concluded that the suicidal ideation is an increasing concern among college students in Jeddah, Saudi Arabia. Approximately a quarter of participants expressed wishing they were dead in the previous year, and nearly 10% considered suicide.

**Keywords:** Suicide Ideation, Suicide Attempt, Sadness, Burnout.

## 1. INTRODUCTION

In KSA and Islamic countries, suicide is not permitted. According to the Islamic religion, there are five necessities, and one of which is the preservation of life.

Suicide violates this necessity because it is a crime against oneself (Madadin et al., 2013). Adolescents, especially college students, are more prone to self-harm behaviors because they have many stressors, ranging from internal motives like depression and parents' separation to external ones such as exams and poor relationships with friends. All the previously mentioned factors can lead to suicidal ideation (Helaly et al., 2015). College enrolment for the first year can be particularly stressful for students who are psychologically vulnerable with poor support systems because this critical time involves a transition from adolescence to emerging adulthood. College students are at a significantly high risk for suicidal ideation (SI), planning, and attempts (Shim and Jeong, 2018).

Suicide is the third leading cause of death among college students (15–24 years old) after accidents and homicides. Among this age group, suicide accounts for 12.3% of all deaths annually. Recently, several suicides have occurred at well-known universities in the USA, receiving significant media attention. As a result, there have been increased efforts to study the prevalence and etiology of youth suicide, as well as to develop college-based suicide prevention programs (Farabaugh et al., 2012). Suicidal ideation is an essential component in the manner of suicidal behavior and appears as a trigger for other components, i.e., attempting and committing suicide. In college students, suicidal ideation can arise at an especially critical time because of leaving adolescence, stepping into adulthood, as well as the challenges encountered in academic life (Dos-Santos et al., 2017).

According to the World Health Organization (WHO), more than 700,000 people die by suicide every year globally. Suicide constitutes the fourth-leading cause of mortality among 15- to 29-year-olds. Evidence of the growth in this subsection of the population causes a concern, considering the potential for years to be lived, productivity, and change in the lives of these youthful individuals entering the world of academia (Dos-Santos et al., 2017). Suicide ideation is an essential precursor to later attempted and completed suicide and is a significant public health issue. Many initiatives aimed at preventing suicide seek to recognize the earliest indications of clinical depression and promote screening for depression and early intervention. While depression is a prevalent risk factor for suicidal ideations, suicidal ideation within college students might have other etiologies due to developmental shifts that take place in college, which include changes in relationships with family members, peer contexts, and greater possibilities for drug and alcohol abuse (Sokero et al., 2005).

Moreover, studies suggest that suicidal behavior runs in families regardless of psychiatric diagnoses, such as mood disorders. Other heritable factors should be considered, such as a tendency toward impulsive aggression (Arria et al., 2009). Therefore, determining the risk factors that contribute to suicidal ideation in college students may serve as a crucial instrument for the planning of preventive and protective activities, both by university leaders and by healthcare individuals who should assist these students both on and off campus. The international literature has produced various pieces of information regarding suicidal ideation directed toward their specific population; however, the national studies on this subject in the university setting in Saudi Arabia are scarce, an occurrence that strengthens the necessity for research involving this group. This study is crafted to measure the prevalence, identify the risk factors of suicidal ideation, and propose solutions to diminish suicidal ideation among medical college students in Jeddah, Saudi Arabia.

## 2. METHODS

### Study design

This study used a cross-sectional observational design to assess the prevalence of suicidal ideation among university students in Jeddah, Saudi Arabia, and identify associated risk factors.

### Study setting: Participants, recruitment, and sampling procedure

The study population consisted of Saudi college students in the city of Jeddah, Saudi Arabia, who were 18 years of age and older, from both genders.

### Inclusion and Exclusion Criteria

The study's target group was all Saudi college students residing in Jeddah who were 18 years of age or older. Individuals under the age of 18 years or who did not complete the questionnaire or declined to participate were not included in the study.

Sampling

Convenience sampling was used to collect responses using a self-administered on-line questionnaire containing relevant sociodemographic questions and validated scales to measure mental health and suicide risk.

Data collection and tools

A structured questionnaire was employed as a study tool. This tool was created after consulting relevant studies. The questionnaire consisted of 40 questions, classified into five main sections. The first one contained demographic and academic performance-characteristic questions. The second section included psychological and health-related questions. The third section contained the Suicidal Screening by C-SSRS, which is a screening and assessment tool that provides critical information about the presence or absence of suicidal thinking, the intensity of those thoughts, and the presence or absence of prior suicide attempts. The fourth section contained burnout screening by the Copenhagen Burnout Inventory (CBI), a valid and reliable tool for assessing personal and study-related burnout.

Data Analysis

The data obtained were analyzed using the statistical software package SPSS version 29. Both descriptive and inferential statistical analyses were carried out. For descriptive analysis, the frequencies and percentages were calculated for categorical variables. The association between suicidal ideation and potential risk factors was assessed through cross-tabulation, and chi-square test. Pearson's chi-square test examined the relationship between categorical variables. The significance level was  $p \leq 0.05$ , and the results were illustrated in tables.

3. RESULTS

A total of 342 college students completed the survey. Table 1 shows that slightly more than half of the respondents (53.8%) were between 18 and 22 years old. A little over half (52.3%) were men, with the majority (71.6%) were single. More than half of respondents (52.0%) reported living in higher middle-class households and having a 3-5 level of education (61%).

Table 1 Demographic background of participants

Item		N (%)
Age group	18-22	184 (53.8%)
	23-26	135 (39.5%)
	27-30	23 (6.7%)
Gender	Male	179 (52.3%)
	Female	163 (47.7%)
Social Status	Single	245 (71.6%)
	Engaged	30 (8.8%)
	Married	50 (14.6%)
	Divorced	15 (4.4%)
	Widower	2 (0.6%)
Financial Status	Below poverty line	11 (3.2%)
	Low-middle class	97 (28.4%)
	High-middle class	178 (52%)
	High-income class	56 (16.4%)
Education Level	Level 1	23 (6.7%)
	Level 2	26 (7.6%)
	Level 3	58 (17%)
	Level 4	82 (24%)
	Level 5	71 (20.8%)

GPA	Level 6	51 (14.9%)
	Level 7	31 (9.1%)
	>2.5	14 (4.1%)
	2-5 – 3.5	70 (20.5%)
	3.5 – 4.5	166 (48.5%)
	< 4.5	92 (26.9%)

Regarding academic performance, Table 2 shows that slightly more than half of students (48.5%) reported a GPA of 3.5-4.5. Most had no learning difficulties (84.2%) or failed academic courses (77.2%). Satisfaction with the university curriculum was high, with (26.9%) fully satisfied and (57.6%) partially satisfied. Most (88.0%) did not intend to withdraw from university that year and rated their school performance as excellent (27.5%) or good (55.8%).

**Table 2** Academic performance of participants

Question	Answer	N (%)
Do you have any learning troubles?	Yes	54 (15.8%)
	No	288 (84.2%)
Did you fail in any academic course?	Yes	78 (22.8%)
	No	264 (77.2%)
Satisfaction with the curriculum	Completely satisfied	92 (26.8%)
	Partially satisfied	197 (57.6%)
	Dissatisfied	53 (15.5%)
Thoughts about college withdrawal and resume next year	Yes, currently	41 (12%)
	Yes, previously	76 (22.2%)
	No, never	225 (65.8%)
Self-evaluation of school performance	Excellent	94 (27.5%)
	Good (borderline)	191 (55.8%)
	Bad	34 (9.9%)
	Very bad	23 (6.7%)
Poor performance in exams	Yes	101 (29.5%)
	No	241 (70.5%)

Table 3 presents psychological factors and chronic health conditions. Most respondents (83.3%) reported no feelings of peers' rejection or difficulty making friends (78.1%). However, nearly a quarter of respondents reported experiencing recent emotional trauma (23.4%) or being bullied at university (23.6%). Approximately (22%) reported having current psychiatric disorders, and (21.9%) reported having chronic health conditions, and one-third (33.6%) of respondents were smokers. About 12.4% of participants reported parenteral neglect.

On the Suicide Ideation Scale (Table 4 and Figure 1), nearly a quarter (23.9%) answered "yes" to wishing they were dead in the previous year. Just under 10% (9.9%) said "yes" to thoughts of suicide. Smaller proportions supported thoughts about suicide methods (12.3%), suicidal ideation (17.3%), or suicide planning (10.5%), with only (10.8%) reporting a previous suicide attempt.

**Table 3** Psychological and health conditions of participants

Item	Answer	N (%)
Feeling of peers' rejection	Yes	57 (16.7%)
	No	285 (83.3%)
Difficulty making friends	Yes	75 (21.9%)
	No	267 (78.1%)
Want to get married but not be able	Yes	72 (21.1%)
	No	270 (78.9%)
Parenteral neglecton	Yes	46 (12.4%)
	No	296 (87.6%)
Emotional trauma experience recently	Yes	80 (23.4%)
	No	262 (76.6%)
Have you ever been bullied in the college?	Often	23 (6.7%)
	Sometimes	58 (17.0%)
	No	261 (76.3%)
Presence of psychiatric disorders	Yes	76 (22.2%)
	No	266 (77.8%)
Presence of chronic diseases	Yes	75 (21.9%)
	No	267 (78.1%)
Do you smoke?	Yes	115 (33.6%)
	No	227 (66.4%)

**Table 4** Suicidal screening by C-SSRS

Question	Answer	N (%)
Have you wished you were dead during last 12 months?	No	260 (76.1%)
	Yes	82 (23.9%)
Have you had any thoughts about killing yourself during last 12 months?	No	308 (90.1%)
	Yes	34 (9.9%)
Have you thought about how you would kill yourself during last 12 months?	No	300 (87.7%)
	Yes	42 (12.3%)
Did you think that killing yourself is something that you might do?	No	283 (82.7%)
	Yes	59 (17.3%)
Have you planned out how you would kill yourself?	No	306 (89.5%)
	Yes	36 (10.5%)
Did you do anything to try killing yourself?	No	305 (89.2%)
	Yes	37 (10.8%)

The screening showed that a 9.9% of the students had thoughts about killing themselves, however, 23.9% were wished that they were dead during the last 12 months. An 10.8% of the students were tried to kill themselves or tried to be planned to kill themselves. Chi-square tests of independence were conducted to examine potential associations between various demographic factors and levels of suicidal ideation (Table 5A). Demographic variables included age group (18–22, 23–26, 27–30), gender (male, female), social status (single, engaged, married, divorced, and widowed), financial status, and education level (Levels 1–7).

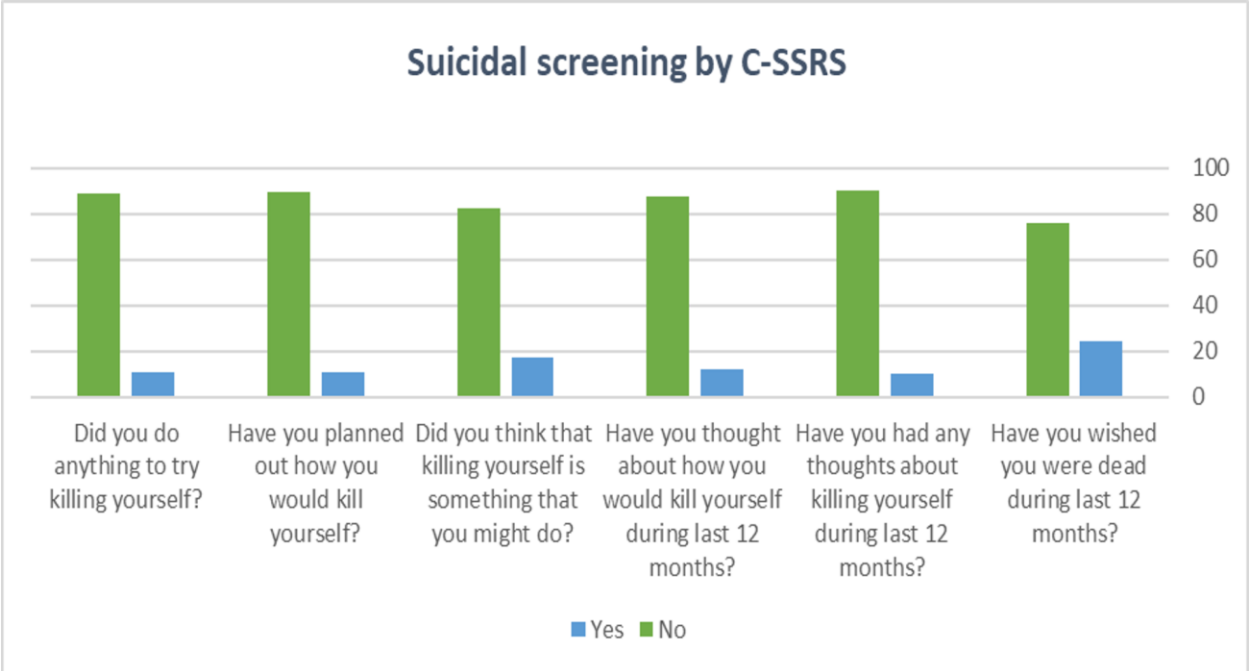


Figure 1 Results for the suicidal screening by the C-SSRS.

The relationship between the age group and the ideation level was insignificant ( $\chi^2(6) = 6.391, p < 0.381$ ). Gender was also unrelated to ideation ( $\chi^2(3) = 1.951, p < 0.583$ ). Similarly, no significant relationships emerged for social status,  $\chi^2(12) = 9.501, p < 0.660$ , or education level,  $\chi^2(18) = 15.875, p < 0.601$ . However, a marginally significant association was observed between financial status and suicidal thoughts ( $\chi^2(9) = 16.658, p < 0.054$ ). Specifically, the lower middle class and below-poverty line groups had higher representation across ideation categories than the upper classes (Table 5B).

Table 5A Relationship between demographic factors and suicidal ideation /behavior

Parameter		Mild N (%)	Moderate N (%)	Severe N (%)	No Suicidal ideation/behavior N (%)
Age group	18-22	41 (50.6%)	23 (66.7%)	9 (75%)	111 (51.9%)
	23-26	34 (42%)	9 (25.7%)	2 (16.7%)	90 (42.1%)
	27-30	6 (7.4%)	3 (8.6%)	1 (8.3%)	13 (6.1%)
Gender	Male	47 (58%)	19 (54.3%)	7 (58.3%)	106 (50.5%)
	Female	34 (42%)	16 (45.7%)	5 (41.7%)	108 (50.5%)
Social Status	Single	62 (76.5%)	25 (71.4%)	11 (91.7%)	147 (68.7%)
	Engaged	7 (8.6%)	3 (8.6%)	1 (8.3%)	19 (8.9%)
	Married	10 (12.3%)	5 (14.3%)	0 (0%)	35 (16.4%)
	Divorced	2 (2.5%)	1 (2.9%)	0 (0%)	12 (5.6%)
	Widower	0 (0%)	1 (2.9%)	0 (0%)	1 (0.5%)
Financial Status	Below poverty line	3 (3.7%)	1 (2.9%)	1 (8.3%)	6 (2.8%)
	Low- middle class	24 (29.6%)	14 (40%)	6 (50%)	53 (24.8%)
	High-middle class	49 (60.5%)	14 (40%)	4 (33.3%)	111 (51.9%)
	High-income class	5 (6.2%)	6 (17.1%)	1 (8.3%)	44 (20.6%)
Education Level	Level 1	6 (7.4%)	1 (2.9%)	0 (0%)	16 (7.5%)
	Level 2	4 (4.9%)	2 (5.7%)	2 (16.7%)	18 (8.4%)
	Level 3	11 (13.6%)	8 (22.9%)	4 (33.3%)	35 (16.4%)

	Level 4	20 (24.7%)	7 (20%)	1 (8.3%)	54 (25.2%)
	Level 5	16 (19.8%)	11 (11.4%)	2 (16.7%)	42 (19.6%)
	Level 6	13 (16%)	4 (11.4%)	3 (25%)	31 (14.5%)
	Level 7	11 (13.6%)	2 (5.7%)	0 (0%)	18 (8.4%)

**Table 5B** Pearson Chi-square test between parameters. df: degree of freedom

Parameter	Result
Age group	
Chi-square	6.391
df	6
Significance level	0.381
Gender	
Chi-square	1.951
df	3
Significance level	0.583
Social status	
Chi-square	9.501
df	12
Significance level	0.660
Financial status	
Chi-square	16.658
df	9
Significance level	0.054*
Education level	
Chi-square	15.875
df	18
Significance level	0.601

**Table 6A** Relationship between academic performance and suicidal ideation /behavior

Parameter		Mild N (%)	Moderate N (%)	Severe N (%)	No Suicidal ideation/behavior N (%)
GPA	< 2.5	2 (2.5%)	4 (11.4%)	0 (0%)	8 (3.7%)
	2.5 – 3.49	25 (31%)	8 (22.9%)	4 (33.3%)	33 (15.4%)
	3.5 – 4.45	41 (51%)	16 (45.7%)	3 (25%)	106 (49.5%)
	> 4.5	13 (16%)	7 (20%)	5 (41.7%)	67 (31%)
Do you have any learning troubles?	Yes	19 (23.5%)	12 (34.3%)	6 (50%)	17 (54.7%)
	No	62 (76.5%)	23 (65.7%)	6 (50%)	197 (92%)
Did you fail in any academic course?	Yes	27 (33.3%)	10 (28.6%)	5 (41.7%)	36 (16.8%)
	No	54 (67%)	25 (71.4%)	7 (58.3%)	178 (83.2%)
Satisfaction with curriculum	Completely satisfied	18 (22%)	7 (20%)	6 (50%)	61 (28.5%)
	Partially satisfied	52 (64%)	23 (65.7%)	5 (41.7%)	117 (54.7%)
	Dissatisfied	11 (13.6%)	5 (14.3%)	1(8.3%)	36 (16.8%)
Thoughts about withdrawal from the year and complete next	Yes, currently	7 (8.6%)	4 (11.4%)	2 (16.7%)	28 (13%)
	Yes, previously	29 (36%)	12 (34.3%)	4 (33.3%)	31 (14.5%)

year	No, never	45 (56%)	19 (54.3%)	6 (50%)	155 (72.4%)
Self-evaluation of school performance	Excellent	22 (27%)	2 (5.7%)	2 (16.7%)	68 (31.8%)
	Good	42 (52%)	24 (68.6%)	9 (75%)	116 (54.2%)
	Bad	14 (17%)	7 (20%)	0 (0%)	13 (6%)
	Very bad	3 (3.7%)	2 (5.7%)	1 (8.3%)	17 (7.9%)
Poor performance in exams	Yes	31 (38%)	19 (54.3%)	6 (50%)	45 (21%)
	No	50(61.7%)	16 (45.7%)	6 (50%)	169 (79%)

Table 6A represents a series of chi-square tests of independence that were performed to examine relationships between academic performance and levels of suicidal ideation. Academic factors included GPA, learning troubles, past-course failures, curriculum satisfaction, thoughts of withdrawing, self-evaluation of performance, and exam performance. The results obtained from the present study indicated a significant association between GPA and suicidal ideation ( $\chi^2(9) = 21.915$ ,  $p < 0.009$ ). Individuals with higher GPAs were less represented in the mild-to-severe ideation categories.

Significant relationships also emerged for learning troubles,  $\chi^2(3) = 33.056$ ,  $p < 0.001$ , past course failures,  $\chi^2(3) = 12.536$ ,  $p < 0.006$ , thoughts of withdrawing,  $\chi^2(6) = 20.526$ ,  $p < 0.002$ , self-evaluation of performance,  $\chi^2(9) = 24.158$ ,  $p < 0.004$ , and exam performance,  $\chi^2(3) = 23.131$ ,  $p < 0.001$ . Low academic functioning and more negative academic appraisals were compared with increased ideation levels. Curriculum satisfaction was unrelated to creativity ( $p < 0.361$ ) (Table 6B).

**Table 6B** Pearson Chi-square test between parameters. df: degree of freedom

Parameter		Result
GPA	Chi-square	21.915
	df	9
	Significance level	0.009*
Do you have any learning troubles?	Chi-square	33.056
	df	3
	Significance level	0.0001**
Did you fail in any academic course?	Chi-square	12.536
	df	3
	Significance level	0.006*
Satisfaction with curriculum	Chi-square	6.588
	df	6
	Significance level	0.361
Thoughts about withdrawal from the year and complete next year	Chi-square	20.526
	df	6
	Significance level	0.002*
Self-evaluation of school performance	Chi-square	24.158
	df	9
	Significance level	0.004*
Poor performance in exams	Chi-square	23.131
	df	3
	Significance level	0.0001**

Table 7A presents an examination of the relationship between psychological factors, chronic health conditions, and levels of suicidal ideation. Factors included feelings of rejection, difficulty making friends, the desire to marry but being unable to, parental neglect, recent emotional trauma, bullying history, psychiatric disorders, chronic diseases, and smoking status. Significant relationships were noticed among all the social factors and ideation levels: Rejection feeling,  $\chi^2(3) = 49.419$ ,  $p < 0.001$ ; difficulty making friends,  $\chi^2(3)$



=47.130,  $p<0.001$ ; desire to marry but unable,  $\chi^2(3) = 30.653$ ,  $p<0.001$ ; parental neglect,  $\chi^2(3) = 41.002$ ,  $p<0.001$ ; recent emotional trauma,  $\chi^2(3) = 40.920$ ,  $p<0.001$ ; bullying history,  $\chi^2(6) = 54.276$ ,  $p<0.001$ ; psychiatric disorders,  $\chi^2(3) = 49.359$ ,  $p<0.001$ ; chronic diseases,  $\chi^2(3) = 30.240$ ,  $p<0.001$ ; and smoking status,  $\chi^2(3) = 21.846$ ,  $p<0.001$  (Table 7B).

**Table 7A** Relationship between psychological factors, chronic health conditions and suicidal ideation /behavior

Parameter		Mild N (%)	Moderate N (%)	Severe N (%)	No Suicidal ideation/behavior N (%)
Feeling of peers' rejection	Yes	14 (17.3%)	18 (51.4%)	6 (50%)	19 (8.9%)
	No	67 (82.7%)	17 (48.6%)	6 (50%)	195 (91.1%)
Difficulty making friends	Yes	30 (37%)	14 (40%)	8 (66.7%)	23 (10.7%)
	No	51 (63%)	21 (60%)	4 (33.3%)	191 (89.3%)
Want to get married but unable	Yes	18 (22.2%)	15 (43%)	8 (66.7%)	31 (14.5%)
	No	63 (77.8%)	20 (57%)	4 (33.3%)	183 (85.5%)
Parental neglect	Yes	20 (24.7%)	10 (28.6%)	5 (41.7%)	9 (4.2%)
	No	61 (75.3%)	25 (71.4%)	7 (58.3%)	205 (95.8%)
Did you experience any emotional trauma recently?	Yes	29 (35.8%)	18 (51.4%)	6 (50%)	27 (12.6%)
	No	52 (64.2%)	17 (48.6%)	6 (50%)	187 (87.4%)
Have you ever been bullied in college?	Often	8 (9.9%)	5 (14.3%)	4 (33.3%)	6 (2.8%)
	Sometimes	15 (18.5%)	15 (42.9%)	3 (25%)	21 (9.8%)
	No	58 (71.6%)	15 (42.9%)	5 (41.7%)	187 (87.4%)
Do you have any psychiatric disorders?	Yes	31 (38.3%)	12 (34.3%)	9 (75%)	24 (11.2%)
	No	50 (61.7%)	23 (65.7%)	3 (25%)	190 (88.8%)
Do you have any chronic diseases?	Yes	22 (27.2%)	12 (34.3%)	9 (75%)	32 (15%)
	No	59 (72.8%)	23 (65.7%)	3 (25%)	182 (85%)
Do you smoke?	Yes	34 (42%)	19 (54.3%)	8 (66.7%)	54 (25.2%)
	No	47 (58%)	16 (45.7%)	4 (33.3%)	160 (74.8%)

**Table 7B** Pearson Chi-square test between parameters. df: degree of freedom

Parameter		Result
Feeling of rejection by peers	Chi-square	49.419
	df	3
	Significance level	0.0001*
Difficulty making friends	Chi-square	47.130
	df	3
	Significance level	0.0001*
Want to get married but unable	Chi-square	30.653
	df	3
	Significance level	0.0001*
Parental neglect	Chi-square	41.002
	df	3
	Significance level	0.001*
Did you experience any emotional trauma recently?	Chi-square	40.920
	df	3

	Significance level	0.0001*
Have you ever been bullied in college?	Chi-square	54.276
	df	6
	Significance level	0.0001*
Do you have any psychiatric disorders?	Chi-square	49.359
	df	3
	Significance level	0.0001*
Do you have any chronic diseases?	Chi-square	30.240
	df	3
	Significance level	0.0001*
Do you smoke?	Chi-square	21.846
	df	3
	Significance level	0.0001*

Table 8 presents the responses to the Burnout Screening survey by the Copenhagen Burnout Inventory. Most students responded, "Sometimes" (46.8%) or "Often" (15.5%), to the question, "How often do you feel tired?". Similarly, nearly half (43.6%) reported feeling physically exhausted, at least "sometimes". Regarding emotional exhaustion, (37.4%) felt this way at least "sometimes", with (10.8%) reported feeling emotionally exhausted "always". Nearly one-third (31.0%) responded that they "sometimes" think, "I can't take it anymore", while (14.0%) reported this thought as "always". Feelings of being worn out were also commonly reported, with (33.0%) feeling worn out "sometimes" and (23.7% feeling worn out "often".

The risk of illness from feeling weak was reported as at least "sometimes" by (31.6%) of students. Most students found their study at least "somewhat" (37.4%) or "to a high degree" (18.1%) emotionally exhausting. (37.2%) felt burned out from studying "to a high degree" or more. Frustration from studying was reported as high as "to a high degree" by (23.1%) and "somewhat" (30.7%). Fatigue persists, as (32.7%) felt worn out after studying "Sometimes" and (16.4%) "Always". Morning exhaustion at the thought of studying was reported by (29.2%) "Sometimes". Majorities also reported that studying was at least "sometimes" (31.3%) or "often" (19.0%) tiring. Having adequate energy for friends and family during free time was rated as "sometimes" by 32.7%, "sometimes" by 16.4%, "always" by 17.8%, and "never" by 17.8%.

**Table 8** Burnout screening by Copenhagen Burnout Inventory

Question	Answer	Count (%)
How often you feel tired?	Always	23 (6.7%)
	Often	53 (15.5%)
	Sometimes	160 (46.8%)
	Rarely	45 (13.2%)
	Never	61 (17.8%)
How often are you physically exhausted?	Always	36 (10.5%)
	Often	69 (20.2%)
	Sometimes	149 (43.6%)
	Rarely	34 (9.9%)
	Never	54 (15.8%)
How often are you emotionally exhausted?	Always	37 (10.8%)
	Often	62 (18.1%)
	Sometimes	128 (37.4%)
	Rarely	49 (14.3%)
	Never	66 (19.3%)

How often do you think “I can’t take it anymore”?	Always	48 (14%)
	Often	58 (17%)
	Sometimes	106 (31%)
	Rarely	67 (19.6%)
	Never	63 (18.4%)
How often do you feel worn out?	Always	36 (10.5%)
	Often	81 (23.7%)
	Sometimes	113 (33%)
	Rarely	52 (15.2%)
	Never	60 (17.5%)
How often do you feel weak and susceptible to illness?	Always	37 (10.8%)
	Often	60 (17.5%)
	Sometimes	108 (31.6%)
	Rarely	65 (19%)
	Never	72 (21.1%)
Is your study emotionally exhausting?	To a very higher degree	42 (12.3%)
	To a high degree	62 (18.1%)
	Sometimes	128 (37.4%)
	To a low degree	42 (12.3%)
	To a very low degree	68 (19.9%)
Do you feel burnt out because of your study?	To a very higher degree	55 (16.1%)
	To a high degree	72 (21.1%)
	Sometimes	116 (33.9%)
	To a low degree	39 (11.4%)
	To a very low degree	60 (17.5%)
Does your study frustrate you?	To a very higher degree	40 (11.7%)
	To a high degree	79 (23.1%)
	Sometimes	105 (30.7%)
	To a low degree	41 (12%)
	To a very low degree	77 (22.5%)
Do you feel worn out at the end of the studying day?	Always	56 (16.4%)
	Often	81 (23.7%)
	Sometimes	112 (32.7%)
	Rarely	38 (11.1%)
	Never	55 (16.1%)
Are you exhausted in the morning at the thought of another day at study?	Always	52 (15.2%)
	Often	66 (19.3%)
	Sometimes	100 (29.2%)
	Rarely	52 (15.2%)
	Never	72 (21.1%)
Do you feel that every studying hour is tiring for you?	Always	46 (13.5%)
	Often	65 (19%)
	Sometimes	107 (31.3%)
	Rarely	65 (19%)
	Never	59 (17.3%)

Do you have enough energy for family and friends during leisure time?	Always	56 (16.4%)
	Often	67 (19.6%)
	Sometimes	112 (32.7%)
	Rarely	46 (13.5%)
	Never	61 (17.8%)

4. DISCUSSION

This study investigated the suicide ideation among the Saudi college students in Jeddah, Saudi Arabia. We found numerous notable findings that aligned with and diverged from earlier research in other countries. In terms of demographics, the study discovered that gender, age, and educational level were not related to suicidal ideation, which is consistent with some international research (Hawton and James, 2005; Nock et al., 2008). However, the higher prevalence of ideation among lower-middle-class/below-poverty groups in this study contradicts findings from a survey conducted in the United States, which found no such link (Franklin et al., 2017). In terms of educational performance, the current study discovered that poorer GPA, learning difficulties, failures, and negative self-assessments were associated with more significant suicide ideation, as seen in comparable studies in other countries (Beautrais, 2000; Mortier et al., 2018).

In terms of psychosocial factors, the links discovered between trauma, bullying, psychiatric disorders, chronic health issues, and suicide ideation are consistent with a body of literature demonstrating the impact of unpleasant life experiences on mental health (Kessler et al., 2005; Nock et al., 2009). The study's identification of burnout and emotional exhaustion as significant predictors of suicidal ideation among Jeddah college students is a novel contribution to the existing literature, as few studies have specifically examined burnout concerning suicidal thoughts in this demographic. Overall, the findings of this study provide important insights into the complex interplay of demographic, academic, psychosocial, and health-related risk variables that contribute to suicide ideation among college students in Jeddah. This study emphasizes the need for context-specific information when designing interventions to address mental health concerns among college students, as it aligns with and diverges from previous research findings.

The analysis of demographic factors and their relationship with suicidal thoughts yielded intriguing findings that both aligned with and differed from earlier research in other countries. Our study revealed that the 18–22 age group had the most significant representation across mild, moderate, and severe ideation categories, though this was not statistically significant. This finding contradicts research conducted in the United States by Franklin et al., (2017), which reported a higher prevalence of suicide ideation among older college students. In terms of gender distribution across different levels of ideation, the study found an equal split between men and women, with no significant connection. This lack of a gender difference in suicidal thoughts is consistent with the findings of another study Hawton and James, (2005) that investigated the relationship between suicide and self-harm among young people.

Regarding the financial status, our study revealed that lower-middle-class and below-poverty line groups had a more significant number of individuals in the mild, moderate, and severe ideation categories than upper-income groups, with the difference nearing statistical significance. This finding is consistent with another study, which was a cross-national study about the prevalence and risk variables for suicide ideation, planning, and attempts among various socioeconomic categories (Nock et al., 2008). While relationship status and education level did not substantially correlate with suicidal ideation in this study, the prevalence of single individuals reporting ideation and the lack of correlation between education level and ideation differed from previous findings.

For example, another study revealed that people with lower levels of education had a higher prevalence of suicide ideation. Overall, the current study found that various demographic categories had higher suicidal ideation; however, only the correlation with financial status was marginally significant (Beautrais, 2000). The differences in findings underscore the necessity of considering contextual factors and cultural differences when assessing the association between demographic features and suicidal ideation among college students in various countries.

Limitations of the study

Our study has several limitations. First, the study's cross-sectional design limits the capacity to prove causality or pinpoint temporal correlations between risk factors and suicidal thoughts because it only collects data at one point in time. Longitudinal studies could offer deeper insights into the dynamics of these variables over time. Second, depending solely on self-administered on-line

questionnaires, the risk of self-report bias raises, which can skew participant responses based on societal desirability and possible question misunderstanding. Third, the use of convenience sampling may lead to selection bias, as individuals who chose to respond might not accurately represent the broader population of college students in Jeddah, potentially limiting the generalizability of the findings.

Fourth, the analysis may have missed unmeasured confounders or study-excluded variables like trauma exposure or a family history of mental illness, which could distort the correlations between predictors and suicidal ideation that have been established. Besides, it might have been difficult to get a high response rate for the on-line survey, which raised questions about non-response bias. Participants who opted out of the survey might possess different characteristics from those who participated, possibly affecting the collected data. Despite these challenges, the study illuminates essential aspects of suicidal thoughts among college students in Jeddah, underscoring need for future research to address these limitations for enhanced understanding and prevention of suicide ideation within academic environments.

## 5. CONCLUSIONS AND RECOMMENDATIONS

The study revealed that approximately one-quarter of the college students in Jeddah, Saudi Arabia, expressed wishing they were dead in the previous year, and nearly 10% considered suicide. Several risk factors, including poor academic performance, psychiatric problems, chronic health concerns, and a history of emotional trauma or bullying, have been strongly linked to increased suicide ideation. However, demographic characteristics were not related to the suicidal ideation. The findings highlight the importance of comprehensive intervention and prevention initiatives to address mental health issues and suicidal ideation among college students in the region.

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### Author's Contributions

All the authors contributed to the proposal writing, data collection, data entry and data analysis, results, discussion and writing final revision of the manuscript.

### Ethical Approval

This study was approved by Dr. Soliman Fakeeh Hospital (DSFH) Scientific Research Review Committee (DSFH IRB approval # 132/IRB/2020; Date: 05th November 2020).

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### Conflict of interest

The authors declare that there is no conflict of interests.

### Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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